

REMARKS

Applicants respond as follows to the numbered Sections of the Office Action under response.

1-2. Claims 51 and 52 are presently withdrawn from consideration, subject to possible rejoinder upon allowance of a claim to the elected method.

3. Duly noted.

4. The title has been amended as suggested. Since the word “media” is in the plural, the article “an” has been omitted.

5. Appropriate corrections have been made in the specification and claims pursuant to the Examiner’s suggestions.

It is conventional in the paper making and coating arts to define proportions of constituents “by weight” and those skilled in the art recognize this as standard. See also the formulation described by weight at Page 10, line 15, to Page 11, line 2 of the instant specification. For the sake of clarity, the term “by weight” has been incorporated in all relevant locations in the specification and in claims 39 and 40.

6. It is submitted that the Applicants have made proper use of the trade designations employed by the makers of the various constituents employed in the practice of

Applicants' invention. The initial letter of each trade designation has been capitalized and each designation is accompanied by generic terminology. Whether the designations are registered trademarks is unknown, but in any event Applicants have in each instance identified the owner and clearly acknowledged the owner's proprietary rights.

7-8. Claim 35, and thus claim 36 dependent thereon, have been amended to correspond to terminology quoted from the specification, i.e., to call for a substrate having a basis weight "as low as 30 pounds." See specification page 7, lines 10-11.

In claim 37, the foundation for the 80 lb. lower end point of the basis weight range is found in Example 4 at Page 18, lines 2-3. To clarify, the paragraph beginning at Page 7, line 3, has been amended to correctly specify the range as "80-100 pounds."

Claim 46 has been amended to claim the full range of constituents as set forth in the specification, rather than so-called subsets of the ranges.

9-10. As noted in Section 5 above, the proportions of constituents in paper and paper coatings are conventionally designated by weight. Claims 39 and 40 have been amended to call for proportions "by weight".

Though claim 49 was said to be rejected as indefinite, no basis for the rejection has been stated and the rejection is therefore traversed. Claim 49 appears to be clear and definite.

11-13. The suggested changes have been made.

14-15. The rejection of claim 50 under 35 U.S.C. 102(e) as being anticipated by *Saito et al.* is traversed.

The claim states that the coating composition is applied onto an absorbent substrate, as opposed as being applied to an impervious polyethylene barrier sheet, as in *Saito*. The claim as amended further specifies that the composition forms a sieve or screen facilitating penetration of ink carrier vehicle to the absorbent substrate for absorption by the substrate while holding ink pigment or colorant out on the sieve or screen. In contrast, *Saito* instructs the opposite -- an impervious substrate.

Saito et al. does not have an absorbent substrate onto which a coating composition is applied. *Saito* specifically teaches that the substrate must be rendered impervious to the ink jet carrier liquid, i.e., water. See *Saito's* Abstract (“non-water absorbing support”) and col. 9, lines 34 et seq. (“non-water absorbing support”). The application of a polyethylene layer in *Saito* renders the substrate impervious. *Saito* cannot be read as disclosing an absorptive substrate.

In *Saito*, all of the ink solvent is absorbed in the coating layer, nothing passes through the substrate. *Saito* teaches a very high coat weight coating layer on an impervious, non-absorbent support. Applicants teach a very low coat weight on a highly absorbent substrate. In *Saito*, no coating is applied onto an absorbent surface. Applicant's concept is completely different from *Saito's*.

In order to anticipate under Section 102, a reference must disclose each and every element of the claimed invention arranged as in the claim. *Connell et al. v. Sears Roebuck Co.*, 220 USPQ 193, 198 (Fed. Cir. 1983), (“Anticipation requires the presence in a single prior art disclosure of all elements of a claimed invention arranged as in the claim.”). *Structural Rubber Products Co. v. Park Rubber Co.*, 223 USPQ 1264, 1270 (Fed. Cir. 1984), (Anticipation can only be established by a single prior art reference which discloses each and every element of the claimed invention).

Saito does not teach application of a coating composition to an absorbent substrate for absorption by the substrate of the ink carrier liquid.

The Examiner comments that the claim is open ended, i.e., uses “comprising” language, and therefore does not exclude the use of *Saito*’s polyethylene layers. The language of amended claim 50, specifying “penetration of the ink carrier vehicle to the absorbent substrate for absorption by the substrate” clearly excludes *Saito*’s polyethylene layers.

The Examiner next suggests that PVOH-boric acid-PVOH bonds would inherently be formed in *Saito*’s coated product. Not so. At page 4, Applicants’ specification instructs that the PVOH and boric acid are “cooked together” and that during “the cooking process” a reaction occurs producing PVOH-boric acid-PVOH bonds. “Cooking” implies a high temperature, specifically in this case, 200-210°F (page 12, line 14), close to the boiling point of water. In contrast, *Saito* calls for “heating” his composition at 40°C., the same as 104°F, which is not a “cooking” temperature. In fact, it is barely a warming temperature. A

reaction forming PVOH-boric acid-PVOH bonds will not form at such low temperatures. No reaction can be expected. Consequently, *Saito's* cannot be read to disclose the claimed step of "reacting the boric acid and polyvinyl alcohol to form polyvinyl alcohol-boric acid-polyvinyl alcohol bonds."

Saito employs boric acid simply as a hardening agent (col. 3, line 2), not to form a porous screen.

Applicants claim a method which results in the formation of a light weight, PVOH-boric acid-PVOH sieve or screen like coating on an absorbent surface such that ink jet colorant is retained on the screen and ink jet carrier liquid passes through the screen and is absorbed by the substrate to facilitate rapid drying of the ink.

For the foregoing reasons, *Saito's* disclosure does not disclose Applicants' invention as claimed. The Section 102 rejection of claim 50 should be withdrawn.

16-22. The various rejections of claims 33-50 under 35 U.S.C. 103 as being unpatentable over *Saito* alone, or *Saito* in view of *Abe et al.* or *Saito* in view of *Bauer et al.*, are traversed.

The forgoing discussion of *Saito* and its differences from Applicants' invention are incorporated herein by reference as though here stated in full.

The *Saito* patent has clearly been distinguished from Applicants' invention. Consequently, since *Saito* is the primary reference in all of the Section 103 rejections, these rejections have already been distinguished and should be withdrawn.

17. The suggestion that *Saito et al's* absorptive coating composition could be applied to an absorptive substrate is directly contrary to *Saito's* teaching. *Saito* clearly teaches that the paper substrate must be protected from water, and he does so by laminating the paper between protective water barrier layers of polyethylene. As noted, by the Examiner *Saito* instructs that absorptive substrates are disadvantageous and lead to wrinkling of the images. Without *Saito's* barrier, water would penetrate through the absorptive coating and wet the substrate, irrespective of the thickness of the absorptive coating. The suggestion that *Saito's* "non-water absorbing" polyethylene layers could be omitted is directly contrary to *Saito's* express teachings, and rejects the entire concept that *Saito* advocates. If one relies on a reference, he/she must take the reference for all that it discloses, and not for what can be made out of it based on Applicants' teachings.

The "motivation to undertake change must come from the art and not from [the Applicant's] disclosure." *Ex parte Gould*, 6 USPQ2d 1680, 1684 (PTO Bd. Pat. App. & Inter. 1987), citing *In re Gordon*, 221 USPQ 1125 (Fed. Cir. 1984).

Claim 33 teaches a specific sequence of steps for obtaining a specific objective, i.e., an ink receptive coating comprising a three dimensional sieve or screen, and including the step of "cooking" the PVOH and boric acid together. *Saito* does not cook his composition, does not form PVOH-boric acid-PVOH bonds, and does not form a three dimensional sieve or screen for holding ink pigment on the screen and facilitating penetration of ink carrier vehicle to the substrate for absorption by the substrate.

With regard to the Examiner's comment on claim 36 (at page 12 of the Action), *Saito et al.* in Example 1 (col. 12) describes a coating applied at a wet layer thickness of 220 microns (col. 12, lines 60-61). At a solids content of 11-12%, this wet layer thickness translates to a dry layer thickness of 26 microns or 38 grams per square meter, or 23 lbs. per 3000 sq. ft. There is no practical way for applying this much coating on a water absorbent base without destroying it. The base would severely deform. Nevertheless, the very thick coating undoubtedly compensates for this impervious support.

Claim 36, in contrast, calls for a coat weight of about 1.3 to about 2.7 lbs. per 3000 sq. ft. That is a very light weight coating applied onto an absorbent substrate -- in contrast to *Saito's* heavy weight coating applied to a non-water absorbing support. 2 lbs. vs. 23 lbs. That is a tremendous and nonobvious difference.

18. The substance of Section 18 has been refuted in the foregoing. However it must again be emphasized that *Saito* does not apply his coating onto an absorbent substrate. *Saito* applies his coating onto a "non water absorbing" polyethylene surface.

19. With regard to the rejection based on *Saito et al.* in view of *Abe et al.*, *Saito et al.*, has already been distinguished. *Abe et al.*, discloses sizing agents including rosin sizing agents. Sizing agents improve the wet strength of the base paper. However, there would be no reason to improve the wet strength of *Saito's* base paper because it is plastic laminated and is never wet. Thus, there is not motivation to add *Abe's* size to *Saito's*

base sheet.

Claims 39 and 40 distinguish clearly and patentably over *Saito et al.* in view of *Abe et al.*

20-21. In paragraphs 20-21 of the official action, claims 34 and 42-49 are rejected under 35 U.S.C. § 103 on *Saito et al.* in view of *Bauer et al.* The Examiner notes that *Saito* discloses use of a variety of adjuvant's, including "a thickening agent." However, a thickening agent is not an immobilizer. The terms are not synonymous. *Bauer et al.* discloses a laundry list of "crosslinkers or gelling/thickening agents." "Glyoxal" is buried in a long list of crosslinkers. There is no suggestion in either reference that glyoxal or any other immobilizer can be advantageously employed to complete the formation of a three-dimensional structure and render it permanent. See Applicant's specification at page 5, lines 1-5.

It is respectfully submitted that the Examiner's analysis is the product of hindsight drawn from the Applicants' specification and the incorrect assumption that thickening agents are equivalent to immobilizers.

The Examiner's comments regarding *Saito et al.* have been fully addressed and traversed above. In particular, Applicant traverses a assertion that PVOH-boric acid – PVOH bonds would inherently be formed in *Saito*. *Saito* warms his composition to only 40° C (104°F) while Applicants cook their composition at 200°-210°F. The significant difference

in temperatures negates the inherency assumption.

22. The art made of record but not relied upon has been considered and is deemed no more relevant to Applicants' invention than the references already discussed.

Conclusion

For the reasons set forth above, it is submitted that all of the claims now pending in the Application are in condition for allowance. Reconsideration and allowance of the Application are solicited.

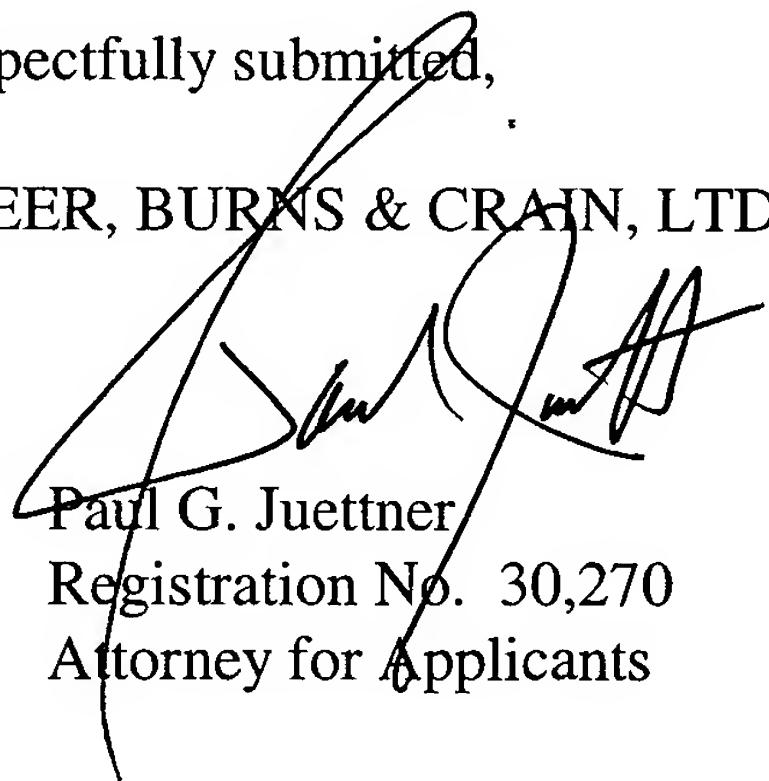
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Suite 2500
300 South Wacker Drive
Chicago, Illinois 60606
Tel: (312) 987-4007
Fax: (312) 360-9315
Customer No. 24978
K:\0329\65528\Am,end.A.doc

Respectfully submitted,

GREER, BURNS & CRAIN, LTD.

By



Paul G. Juettner
Registration No. 30,270
Attorney for Applicants